

Asthma

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What is it?

Asthma is a chronic *inflammatory* disease of the lungs which is partially reversible. The airways of people with asthma are extra sensitive to things they are allergic to (*allergens*) and to irritating things in the air (*irritants*).

Asthma symptoms start when allergens or irritants cause the linings of the airways to swell (become *inflamed*) and narrow. The muscles around the airways can then spasm, causing them to narrow even more. When the lining of the airway is inflamed, it also produces more mucus. The mucus clogs the airways and further blocks the flow of air. As a result, it becomes harder and harder for air to move in and out of the lungs. In a severe asthma attack, it may be extremely difficult - or impossible - to breath. If this occurs, the person needs immediate medical attention.

What causes it?

Asthma is part of the allergic response. When asthma runs in families the trigger is often found to be an allergen. Common allergens include pollen, mold spores, house dust mites, pet dander, and dairy products, especially eggs and milk.

An asthma attack may also be triggered by an irritant - not necessarily an allergen - such as chemical fumes, excessive air pollution, insecticides, chalk dust, tobacco smoke, and other environmental pollutants. Many people suffer from asthma caused by substances which they are exposed to on the job.

Sometimes asthma becomes worse as a result of respiratory infection. Asthma may also be provoked by strenuous exercise or exposure to cold air.

Who gets it?

Five percent of the United States population, including both children and adults, suffer from asthma. The tendency to develop asthma is usually inherited within a family, and frequently other relatives are affected with hay fever, eczema, or asthma. It can begin at any age and can persist for life or resolve after a fairly brief period of time. Severity of the problem can also be quite variable with some people having only mild difficulties while others have more severe difficulty.

People who get recurrent bronchitis often have asthma and don't know it.

What are the symptoms?

When a person experiences a minor asthma reaction, there is not enough narrowing of the airway to produce **wheezing**, and the only manifestation may be **cough**. If the degree of airway narrowing becomes great enough to cause whistling, then one may hear wheezing with breathing. When the asthma reaction is more dramatic, the next phase is termed **respiratory distress** with flaring of the nostrils, indenting of the skin above the breast bone and between the ribs, and decreased air movement when listening to the chest. With severe asthma wheezing is not heard because there is so much narrowing of the airways that minimal air moves in and out. At this point, besides evidence of distress, a person may manifest **blueness** of the lips and nail beds indicating inadequate exchange of oxygen with the lungs. This is a medical emergency.

Warning signs

- Cough or wheeze
- Shortness of breath
- Chest tightness
- Respiratory distress
- Persistent respiratory infections

How do you prevent it?

If a particular allergen has been pinpointed as the trigger for your asthma, every effort should be made to avoid contact with it. Skin testing can sometimes be helpful in determining allergens. If outdoor pollen and mold cause you to have symptoms, try to stay in air conditioned places with the windows closed during the mid-day and afternoon, when pollen is worst. Don't

allow smoking in your house or car. Cigarette smoke can make you have attacks more often.

Pets like cats and dogs can cause problems. If you are allergic to a pet, it should be kept outdoors or at least out of your bedroom. Also, keep pets off the furniture and vacuum floors often, especially carpeting. Wash your hands each time after touching your pet.

To keep mold down clean and air out bathrooms, kitchens and basements often. Keep the humidity under 50%. You can do this with an air conditioner or a dehumidifier. If you use a humidifier, keep it clean so that mold doesn't grow in it. An electrostatic filter on the heating and cooling system or an air cleaner with a high efficiency particulate filter (air purifier) may help remove most spores and other allergens from the air. Your vacuum should also have a similar type filter.

Some people are allergic to dust mites - the main part of most house dust. Dust mites in your house may be reduced by washing pillow cases weekly in hot water, covering mattresses and pillows in airtight covers and removing carpets and drapes. If you have carpet, treating it with chemicals can reduce dust mites for up to 6 months. Commercial spray containing tannic acid neutralizes dust mites so they don't cause allergic symptoms. You can try using it in areas where you spend a lot of time. You might also need to avoid using feather pillows. Stuffed animals, dried flowers, and other things that catch dust should be avoided.

Can it be treated?

There are a variety of agents both inhaled and by tablet which are effective in controlling symptoms and aborting attacks. It usually takes a while to establish a routine of asthma management which works for one individual. For patients with moderate to severe asthma, a peak flow meter can be very helpful for monitoring. Regular peak flow measurements help detect early signs of attacks before symptoms occur.

- **Bronchodilators** like albuterol (Proventil, Ventolin), and pirbuterol (Maxair) help the muscles around your airways relax. This allows them to stay open so that air can move into and out of your lungs. Bronchodilators should normally be used infrequently only when they are needed to reduce symptoms quickly (so called "rescue medicine"). They can be used every 4 hours if needed. If your bronchodilator does not relieve symptoms within 15 - 30 minutes, or if the inhaler is becoming less effective, or you are using the inhaler more regularly than initially prescribed (more than one canister per month), consult your doctor.

Salmeterol (Serevent, Foradil) is a long-acting bronchodilator which is used every 12 hours and is especially helpful for nighttime asthma.

- **Corticosteroids** are available in oral, injectable and inhaled form (Flovent, Qvar, Pulmicort, Azmacort, Advair). They work very well because they stop the inflammatory reaction which causes asthma in the first

place. Inhaled forms of corticosteroids are used most often to treat asthma. The medication goes directly to where the inflammation is in the lungs. Because very little medication gets into your bloodstream, serious side effects are unusual. You may need to take corticosteroids for a week or two before you notice any difference in your symptoms. You should find that you need your bronchodilator less often when you use corticosteroids regularly.

- **Cromolyn (Intal)** and **nedocromil (Tilade)** are another type of antiinflammatory medication. When used regularly (3 - 4 times a day) they can help reduce the tendency to have reactions in response to triggers. However, once an asthma attack has started, cromolyn and nedocromil are not effective in stopping that attack.

- **Leukotriene receptor antagonists (Singulair, Accolate, Zyflo)** are useful for maintenance of chronic asthma. They work by blocking *leukotrienes* which are chemical messengers which trigger asthma. They must be taken regularly to be effective. Side effects can include headache, infection, and nausea.

- **Theophylline** is thought to reduce the reactivity of the airways to triggers which cause spasm. Theophylline is probably most helpful in people who experience asthma symptoms at night while they are sleeping. Common side effects include headache, irritability, and nausea.

Are there complications?

You should be able to live an active and full life if you follow your treatment carefully. Talk to your family doctor about taking medicine to prevent wheezing before exercising, on cold days, or on days when pollution is bad or pollen count is high.

Serious complications are unusual but have been increasing in recent years. The most important message for asthmatics is to treat asthma in cooperation with your physician and to seek help immediately if your treatment is not effective in stopping an asthma attack.

In summary

- Asthma attacks begin with a trigger.
- Avoidance of triggers is the key to prevention.
- For more information, contact the Asthma and Allergy Foundation of America at (800) 727-8462 or www.aafa.org and the American Lung Association at (800) 586-4872 or www.lungusa.org.